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Promotion of Environmental Engagement Through Positive Youth Development in Tanzania

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Promotion of Environmental Engagement Through Positive Youth Development in

Tanzania

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Abstract

With climate change and environmental degradation already having devastating effects on communities in sub-Saharan Africa, enhancing youth's commitment to the environment and mobilizing their pro-environmental action is increasingly urgent. In this study, we explored predictors of environmental commitment and action based on a model of positive youth development. We predicted that sociodemographics, self-efficacy, connection to nature, sense of community, and club participation would predict environmental commitment and action. Tanzanian youth ($N = 959$) from regions across the country completed self-report measures assessing these constructs. Using a series of logistic and hierarchical multiple regressions, we were able to predict statistically significant models for civic action, environmental action and responsibility. Self-efficacy served as a specific significant predictor for all models, while gender was instrumental in both civic and environmental action outcomes. If self-efficacy serves a strong predictor of both environmental action and responsibility, Tanzanian children should be in programs that foster this aspect of youth development for a broader impact on youth's developmental trajectories and civic participation to address environmental and related social challenges.

Keywords: youth, positive development, environment, Tanzania, civic engagement

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Tanzanian Youth

A country of immense natural beauty and resources, Tanzania is known for its welcoming people and exotic landscapes, such as Mt. Kilimanjaro and the Serengeti National Park. It also serves a haven for refugees and is marked by an astounding history of interethnic peace, despite being home to over 130 different tribes (Central Intelligence Agency, 2013).

However, Tanzania also harbors a variety of societal and environmental problems. Located in East Africa, Tanzania is home to both great opportunity (i.e. natural resources and youth) and great challenge (i.e. poverty and environmental degradation, (The State of East Africa, 2012). Given the disproportionate amount of youth in Tanzania's population (44 percent under 15), along with an increasing growth and birth rate, the country is overreaching its capacity (World Population Review, 2014). Global climate change and environmental degradation due to human overpopulation and a lack of sustainable practices are causing problems now in this agrarian-based society, and posit a devastating future if not addressed.

 Based on the population's growth rates, the youngest contributors to society are the ones that must carry the heaviest burden of responsibility and action into the future. Accordingly, a population so concentrated in youth presents great opportunity. By enhancing youths' commitment to the environment and mobilizing their pro-environmental action, we can help solve a wide variety of problems and foster positive growth, both socially and environmentally.

Environmental Issues in Tanzania

Tanzania is renowned for its natural beauty and biodiversity. It is home to a wide variety of flora and fauna, including many endangered species, and contains both the highest point in Africa (Mt. Kilimanjaro) and the deepest depth (Lake Tanganyika). Unfortunately, pollution, unplanned land-use changes, and lack of sustainable practices, compounded with the effects of global climate change and overpopulation, jeopardize the ability of Tanzania and its people to grow in a positive direction (http://tz.one.un.org/).

According to the United Nations, Tanzania's single greatest source of income comes from the natural world, as the country's most productive industries include environmental tourism, agriculture, forestry, fisheries, and mining (http://tz.one.un.org/). However, many of the industries that support the social systems of Tanzania are in part responsible its degradation. Production and consumption patterns are increasingly becoming unsustainable and much of the forests and other terrestrial and marine habitats have been decimated due to population pressure and unplanned development (UN MDGs, 2013)

Deforestation poses a specifically harsh and multifaceted problem. One of the main drivers of deforestation is agriculture, as more room is needed to grow enough food for the ever-increasing population (UN MDGs, 2013). A lack of education about sustainable land use, selective cutting, and agriculture practices leads to environmental degradation and can be manifested in overgrazing, wildfires, charcoal making, persistent reliance on wood fuel for energy, over-exploitation of wood resources and lack of land use planning (Blomley et. al., 2008).

This is a particularly difficult issue because the majority of the population relies on the forest for survival. Forests serve as the "safety net" for the country's rural poor (UN MDGs, 2013), making deforestation a Catch-22. While forests provide otherwise impoverished communities with food, wood fuel, medicines and other non-wood products that are necessary for their livelihoods, traditional rural activities are having negative effects on the environment.

Studies in the Amazon and Congo have found that rainfall is lessened by deforestation in tropical areas. When pasture or crops replace forests, evapotranspiration, the recycling of moisture back into the atmosphere by leaves, is reduced as well. Therefore, the air is less humid and less rain can occur (Spracklen, Arnold, & Taylor, 2012). Annual rainfall in Tanzania has decreased at an average rate of 2.8mm per month (3.3 percent) per decade (McSweeny et al., 2010), which falls in accordance with deforestation rates of about 1.1% of forests cleared between 1990 and 2005 (Bromley & Iddi, 2009). In an area already struggling to maintain clean, drinkable water, this issue requires an immediate solution (UN MDGs, 2013).

Deforestation also plays a significant role in the rise of CO_2 in the Earth's atmosphere, and thus global climate change. Trees absorb the greenhouse gases that fuel climate change, and thus limit the amount of greenhouse gases entering the atmosphere (UN MDGs, 2013). According to the Millenium Goals Development Report in 2013, global atmospheric CO_2 levels have risen 46 percent since 1990. Rates are even higher (48 percent between 1990-2000 and 81 percent from 2000-2010) in developing countries like Tanzania due to the rapid and unsustainable changes to the environment, such as

unplanned land use changes and overfarming, necessary to sustain the increased population.

Climate change presents a dire environmental problem for Tanzania, and can be seen most strikingly in the vanishing of the glaciers atop Mt. Kilimanjaro. Although the timeline is debated, it is likely that the glaciers will cease to exist by the year 2020, which will have wide-ranging effects on rainfall and water resources (Agrawala et al., 2003).

Apart from economic development, population increases have put tremendous strain on Tanzania's natural resources. Tanzania has the 18th highest population growth rate and birth rate, with 37.25 births per 1,000 people, and a total fertility rate of over 5 children born per woman. The growth rate shows no signs of changing, as a significant portion of the population (44 percent under 15 and over 65 percent under 25) is within the childbearing years (World Population Review, 2014; Central Intelligence Agency, 2013; Restless Development, 2011).

In addition to high fertility rates, Tanzania has allowed an estimated 300,000 refugees to enter and reside within its boundaries. A generous and markedly peaceful country for the region, Tanzania is often used as a place of asylum for the citizens of the surrounding countries (UNCHR, 2014). Most refugees migrate from rural settings, seeking a village environment in which to settle, thus placing an even greater strain on the local environments (Akarro, 2001).

As the population grows, more resources are required from a limited base. This often leads to overexploitation, misuse, and pollution of the environment (Akarro, 2001). Tanzanians are intimately tied to the environment, with over 80 percent of the population residing in rural areas and nearly all relying on some type of environmentally based

industry (World Population Review, 2014). Therefore, a clean and functioning environment is vital to the success the economy and the livelihoods of many citizens.

Social Issues in Tanzania

Considered the least hospitable corner of the world for youth (UN, 2010), East Africa is characterized by extreme poverty, civil conflict, and high rates of HIV/AIDS victims and orphans (Global Peace Index, 2010). Youth, in particular, are constantly faced with adversity, including sexual assault and trafficking, homelessness, alcohol and drug abuse, forced labor, and a lack of employment opportunities (UYDEL, 2010). With the vast majority of the Tanzanian population concentrated in the adolescent age bracket (World Population Review, 2014), these issues are particularly salient.

Although the United Nations Millennium Developmental Goals (UN MDGs, 2011) have helped Sub-Saharan Africa develop in many important areas, the region still struggles with educational, economic, and health-related issues. The "youth bulge," or the overconcentration of the population in the 15-25 age bracket, places a tremendous strain not only on the environment, but also the economy and social structure (Central Intelligence Agency, 2013; Restless Development, 2011). Young people, particularly those from high-poverty areas, often do not have access to education, and thus lack the skills and knowledge needed to get out of their current situations (Wedgewood, 2005). This lack of education forces many low-income youth into the labor industry, which has quickly become overburdened by the influx of new workers into the market (Restless Development, 2011). Between a deficit in available jobs and little to no way to acquire marketable skills, Tanzanian youth are increasingly being forced to find another way to

make ends meet – either leaving them homeless or involved in illegal activities, such as prostitution and gang activity (Nalkur, 2009; Henly, McAlpine, Mueller, & Vetter, 2010).

A Call to Action

With a population so dense in young people, the development of the nation rests in the promotion of positive youth attributes. Although Tanzania has experienced great success in the promotion of intercultural relations and peace among its many indigenous tribes (Central Intelligence Agency, 2013), the potential for ethnic conflict related to resource inequities is particularly high in the region. Due to increasing population rates and mobility, looming environmental threats, and food insecurity, it is vital that the growing youth population is given the opportunity to become champions of a sustainable future. Youth in Tanzania already present some of the crucial assets needed to promote positive change, such as high levels of optimism and resiliency (Pew Research Center, 2010). Furthermore, East African youth have reported high levels self-efficacy and purpose, which are vital in the promotion of positive behavior and will be discussed in the following sections (Johnson et al., 2011). Cultivating Tanzanians youths' care and concern for the environment and their ability to engage in pro-environmental action are among the key ways they can contribute to the development of their nation.

Positive Youth Development

Research and theory in positive youth development offers a framework for promoting youths' active engagement in environmental issues. The idea that youth can be responsible for and are capable of making positive social change and contribution is a relatively new idea. Positive youth development (PYD) emerged from the development and evaluation of community-based programs dedicated to preventing and changing risk

behaviors among adolescents (Lerner, 2005). Beginning in the mid-1900's, the study of

adolescent development focused on the "storm and stress" conceptual framework (Freud,

1969; Hall, 1904). Adolescents, or youth in the period of development characterized by

rapid change in biological, psychological, cognitive, and social characteristics (Eccles &

Gootman, 2002), were seen as moving toward negative development. This model

encouraged the idea that adolescents were "broken," (Benson, Scales, Hamilton, &

Sesma, 2007) or had a higher likelihood of participating in risk behaviors, and needed to

be fixed.

By the 1960's, developmental scientists had become more critical of this concept.

Rather than viewing adolescence as a just a time for negative growth, researchers began

to recognize the complexity of adolescence. Researchers found that adolescents

experience major changes biologically (i.e. puberty), psychologically (i.e. cognitive and

emotional characteristics), and socially (i.e. social expectations, peer group relations,

relation with authority, and independence) (Offer, 1969; Lerner & Galambos, 1998).

However, not all youth experience these changes at the same time or at the same speed,

thus creating a wide variety of adolescent trajectories.

Discovering the importance of environmental interactions led to an increased

interest in programs that encouraged the positive growth of adolescents rather than the

management of their issues (Lerner, 2005). Positive youth development (PYD), an

offshoot of adolescent developmental theory, emphasizes youths' competencies and

contributions to the community (Lerner, Fischer, & Weinberg, 2000; Schusler &

Krasney, 2010). Although it does not actively seek to change problem behaviors, but

rather supports and encourages positive and constructive action, PYD serves as a buffer

against risky behaviors (Catalano et al., 2004). In fact, Larson (2000) notes that conflict

and risk behaviors are often associated with a lack of engagement. Rather than thinking

of youth as another societal problem to be solved, PYD suggests we make them the

solution by promoting strengths that can reduce a wide range of problem behaviors

(Catalano et al., 2004; Damon, 2004; Pittman, Irby, & Ferber, 2000).

The "Five C's" of PYD

Although there are many conceptual frameworks from which to view PYD, this

study focuses on Zarrett & Lerner's "Five C's" model (2005) which encourages the

positive growth of adolescents' psychological, behavioral and social characteristics,

primarily in the areas categorized by the "Five C's": competence, confidence, connection,

character, and caring/compassion. If a youth excels in these categories, he/she is

considered to be "thriving," and is likely to develop the sixth "C" of PYD: contribution,

or civic engagement (Zarett & Lerner, 2008). Below you will find an excerpt from their

study, which identifies the constructs in greater detail:

Figure 1
The "Five C's" of PYD from Zarrett & Lerner (2008)

The "5 C's" of Positive Youth Development	
"C"	**Definition**
Competence:	Positive view of one's actions in specific areas, including social, academic, cognitive, health, and vocational. Social competence refers to interpersonal skills (such as conflict resolution). Cognitive competence refers to cognitive abilities (e.g., decision making). Academic competence refers to school performance as shown, in part, by school grades, attendance, and test scores. Health competence involves using nutrition, exercise, and rest to keep oneself fit. Vocational competence involves work habits and explorations of career choices.
Confidence:	An internal sense of overall positive self-worth and self-efficacy

Connection	Positive bonds with people and institutions that are reflected in exchanges between the individual and his or her peers, family, school, and community in which both parties contribute to the relationship.
Character	Respect for societal and cultural norms, possession of standards for correct behaviors, a sense of right and wrong (morality), and integrity.
Caring/compassion	A sense of sympathy and empathy for others.

Civic or community participation is considered a hallmark of PYD, and is indicative that youth have the competencies, connections, commitments and confidence needed in order to make improvements in their own circumstances and those of others. Participation in civic action organizations, such as student councils, a youth group associated with a political party, an environmental organization, or a community service group, gives students the opportunity to learn leadership and problem solving skills (Prancer & Pratt, 1999; Roker et al., 1999). These skills further build social and interpersonal competence along with the others PYD aspects, such as confidence and character.

Additionally, civic participation allows youth to connect with others in their community, including both peers and authority-figures. By learning to communicate effectively and work with a wide variety of people, youth involved in civic action groups are capable of advancing intercultural relations, environmental sustainability, and a culture of peace in Sub-Saharan Africa. (Maathai, 2009; Naker, Mann, &Rajani, 2007).

Likewise, a sense of caring/compassion and character are vital for the proliferation of PYD and may be fostered through service to the community, which builds a sense of connection and concern for the wellbeing of others beyond the self. Logically, an increase in the knowledge of a particular group or issue will raise both

awareness and concern. If a person does not know about an issue, it is difficult for him/her to care about it. Youth that exhibit high levels of caring/compassion and character are often closely connected to their environment and community. By getting youth plugged into social and environmental issues through civic participation, we should be able to increase not only their knowledge of issues, but also their caring for such.

Finally, a sense of confidence may be viewed as self-efficacy, or the extent to which one believes they are capable of completing a task or reaching a goal (Ormrod, 2006). Chawla & Cushing (2007) state that confidence "consists of the belief that one can achieve success in areas of personal significance – such as social expectations" (p. 444). If a civic initiative is to be successful, its proponents must have a sense of confidence, both in themselves and as a group.

PYD in Environmental Engagement

While the PYD framework is considered a pathway to general engagement among youth, the question remains: how do we encourage *environmental* engagement among Tanzania's growing youth population? According to the constructs of PYD, connection and competence are essential elements in the promotion of contribution, so some type of civic participation may be essential in the promotion of environmental engagement.

Civic engagement provides a pathway for youth to gain the skills and knowledge necessary to tackle complicated issues and provides them with the opportunity to grow in both confidence and competence. Tanzanian youth want to be included and engaged in development and decision making in their communities, and are seeking opportunities to come together as a group to make plans and start projects (Restless Development, 2011).

According to Schusler & Krasney, "environmental action simultaneously improves environments while helping youth grow as citizens through authentic participation in community issues" (2010, p. 221). By combining civic engagement and environmental participation, we can foster not only youths' strengths, but also their commitment to the environment, thus creating a better social and environmental future for Tanzania.

Environmental participation has the potential to facilitate the type of growth valued in positive youth development because it includes all of the same attributes (Schusler & Krasney, 2010). Often encouraged through participation in a club like Roots & Shoots, environmental participation is than participating in pro-environmental activities, such as planting trees; it focuses on the values associated with taking up a cause, such as empowerment and knowledge through education (Emmons, 1997). Youth empowerment is vital in Tanzania, as many youth feel powerless and left out of important decision making processes (Restless Development, 2011). If we educate youth about environmental issues in a region where environmental degradation is already having devastating effects, they will become instrumental in the policy and social decisions about the environment in the near future.

Environmental clubs allow youth to participate in social activities that are meaningful and provide positive feedback. It encourages and facilitates all of the "Five C's" through the expectation of community involvement and connectedness. Youth are empowered by their participation in, for example, convincing government officials to save a part of the forest or educating their local community about better planting practices. It gives them a sense of ownership and responsibility for something outside

themselves, thus fostering environmental competence, caring for their community,

connection to both the environment and the people of their community, and confidence in

their actions (Schusler & Krasney, 2010).

   According to the value-belief-norm theory by Stern (2000), in order for

environmental initiatives to be effective, people must value the environment and nature

as something important for human civilization and well-being, understand the impact that

environmental degradation will have on them personally, along with the people and

places they love, and have a sense of self/community efficacy, or the understanding that

they have the ability to make a difference. Service learning groups based on

environmental conservation provided an excellent platform through which to foster

conservation knowledge, along with social and cognitive competencies. Recent research

showed that involvement in an environmental club, such as Roots & Shoots in Tanzania,

provided youth an opportunity to grow in both leadership and problem-solving skills.

Additionally, youth reported that the clubs taught them important vocational skills, such

as sustainable farming practices, which are vital if their generation hopes to break the

cycle of poverty and environmental degradation (Johnson-Pynn & Johnson, 2005).

   This is directly in line with Zarrett and Lerner's "Five C's;" people must be

competent in environmental issues, connected to an environment or community that is

being adversely affected, care about the negative affects of environmental degradation in

their community, and be confident enough to act with great character to fix such

problems. Youth involved in these programs must learn the process to advocate for

change and understand that they have the ability to do so (Chawla & Cushing, 2007).

The Current Study

The purpose of this study was to create a credible model for the prediction of environmental behavior (action) and responsibility in Tanzanian youth. In an area where environmental degradation is already taking a tremendous toll on the social and economical well being of a population, immediate environmental action is necessary. Likewise, the Tanzanian youth population is eager to become involved in development and decision making in their communities, and with an ever-increasing percentage of the population concentrated in adolescence, it is vital that we support positive and constructive youth assets. Rather than viewing youth as another social problem to be fixed, this study sees youth as the solution for environmental issues and aims to find a reliable path from which to facilitate engagement in environmental behavior.

Figure 2 represents the organization of the study, with each box representing a step/outcome of the series of regression analysis:

Figure 2
Model Illustration for Analysis of Civic/Envrionmetnal Action and Responsbility
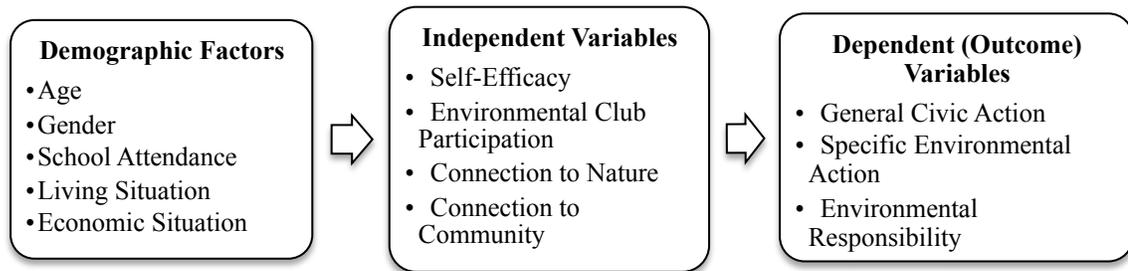
Based on Zarrett and Lerner's (2008) "Five C's" model, this study aimed to integrate aspects of both PYD and environmental education in the cultivation of environmental action and commitment. If competence, confidence, connection, character, and caring/compassion predict contribution, what aspects associated with Tanzanian youth can be seen as predictors of environmental contribution? If we hope to foster a

sense of responsibility for environmental behavior, and thus promote environmental action, what preliminary assets should be supported and encouraged?

The current research examined the effect of competence, confidence, connection, character, and caring/compassion on the promotion of contribution by looking at the predictive value of environmental club participation, connection to nature, sense of community, and self-efficacy on reported environmental action and responsibility. Research suggests that civic engagement is the pathway for a wide variety of positive behaviors, including self-efficacy, social and cognitive competence, character, and caring (Johnson-Pynn & Johnson, 2005; Chawla & Cushing, 2011; Zarrett & Lerner, 2008; Schusler & Krasney, 2010).

Environmental programs develop confidence and skills through hands-on planning and program implementation, and thus bolster self-efficacy over time (Johnson-Pynn & Johnson, 2005, 2010; Johnson & Johnson-Pynn, 2007). These programs were also found to promote a connection to the community and a commitment to action, both integral parts of the "Five C's" model (Johnson et al., 2009). By pairing civic engagement with environmental education and participation as predictors, we hoped to foster both environmental action and responsibility as model outcomes.

Rather than searching for these constructs as outcomes of environmental programs, this study decided to use them as predictors for environmental behavior. Previous research tells us self-efficacy, connection, and commitment are outcomes of environmental programs and clubs, but if we combine those constructs with participation, can we predict environmental and civic engagement. If the Five C's predict contribution, we should be able to predict environmental action and responsibility based on the

presence (or lack there of) of these characteristics. In an area where environmental action is necessary and youth populations are on the rise, fostering environmental behavior in the majority population is vital.

The following hypotheses were examined:

Hypothesis 1: A model which includes environmental club participation, connection to nature, sense of community, and self-efficacy will predict general civic action and specific environmental action.

Hypothesis 2: A model which includes environmental club participation, connection to nature, sense of community, and self-efficacy will predict environmental responsibility.

Methods

Participants

Participants consisted of 959 youth, aged 14-17, from 10 regions across Tanzania (Mwanza, Rukwa, Arusha, Mbeya, Iringa, Dar es Salaam, Njombe, Kilimanjaro, Pwani, and Mtwara). Male participants (N = 483) outnumbered female participants (N = 454) only slightly, though there were several cases with missing data (N = 22). The study encompassed ages 14-17, with the highest number of participants reporting the age 14 (N = 294, 30.6%).

Youth were invited to participate by teachers or staff in their respective program settings, such as school or community site. In an effort to understand a comprehensive sample of Tanzanian youth, the study deliberately included those who were involved in school and extracurricular activities, "normal" school children (in school, but not in clubs), and at-risk youth (e.g. street children, AIDS orphans, those with disabilities). Samples were pulled from both urban (i.e. Arusha and Dar es Salaam; N = 647) and rural districts (i.e.

Iringa, etc.; N = 277), and included students from primary, secondary, and special (i.e.

Iringa School for the Deaf, Kalobe Orphanage Centre, and a sexual workers group)

schools and programs. The study included quantitative and qualitative data, though not

all participants completed both parts.

Procedures

 Translation of measures. The translation of the current study's measures from

English to Swahili was a complicated and arduous process, and primarily used Brislen's

(1970) back-translation method. In fall of 2012, the survey was given to Tanzania

researcher with an advanced degree in Social Work for translation. Upon receiving the

translated survey, it was blind back translated into English. Any issues were examined

and discussed by the research team, which consisted of three Tanzanian research interns,

an U.S. clinical psychologist, and an U.S. doctoral student in clinical psychology.

 The issues with back-translation were mainly contextual; in Swahili, a phrase's

meaning is determined by the context in which it is presented. Tone, setting,

expressiveness, and the relationship of those involved (i.e. age and gender differences)

play a major role in the understanding of a phrase. Many of the expressions and nuances

of the English version were not applicable to Swahili, primarily because the paper version

the survey could not include contextual features. Additionally, back-translation from

Swahili to English created issues because there is more than one way to back-translate in

English from Swahili.

 The research team overviewed and adjusted the survey to reflect the necessary

changes before distribution.

Training of research interns. Sixteen Tanzanian research interns were chosen based on their resumes and experience with youth. The chosen interns were oriented to the PYD paradigm and survey adminstration during a four-day training session in Moshi, Tanzania led by a U.S. clinical psychologist and doctoral student. In small groups, the interns read and discussed the survey, reviewing the constructs among themselves.

Before conducting practice administrations, a U.S. psychologist reviewed the survey with the group to clarify any misunderstandings. Then, the interns were instructed to administer the surveys to a partner and then with Tanzania youth.

Survey administration. Surveys were administered to small groups of Tanzanian youth (N<50) based on their school/program context and location. Each intern was responsible for one region within the country. Every youth received one printed copy of the survey packet. The intern administering the survey read the youth an invitation to participate in the survey and the general instructions. The interns were also responsible for explaining in greater detail the response options of the scale variables (i.e. Likert and Likert-type measures), as many youth outside of the U.S. are unfamiliar with these measures. The interns then read the survey aloud to participants, allowing time for the youth to answer the questions as they read. Any questions posed by the youth were answered briefly and simply.

Measures

Demographics. The first part of the survey included several questions pertaining to participant demographics. Participants were asked to report their age, gender, religion, a description of their area of residence and country of birth/current residence. Additionally, they were to report their current living/economic situation, school

attendance, grade level, and highest level of parental education. These measures were

used to examine the differences in populations pertaining to the prediction of

environmental action and responsibility and served as Step 2 predictors in both the

logistic and linear regression analyses.

        Civic participation index. The civic participation index (CPI) is a measure of

civic participation originally created by Torney-Purta et al. (2001). The original index

included various categories of involvement related to civic action, such as participation in

a student council, an environmental group, a human rights organization, or a group

focused on volunteer activities. The index used for this study was altered to comprise a

more comprehensive breakdown of civic participation, including 16 separate categories:

A student council/student government (class or school parliament), youth organization

affiliated with a political party or union, group which prepares a school newspaper, an

environmental organization, a U. N. or UNESCO club, a student exchange or school

partnership program, a human rights organization, a group conducting (voluntary)

activities to help the community, a charity collecting money for a social cause, Boy or

Girl Scouts (Guides), a cultural association (organization) based on ethnicity, a computer

club, an art/music/drama organization, a sports organization or team, or other.

Participants were instructed to check the box next to any and all organizations in which

they were involved and how often they participated in the organization(s) within the past

12 months. This rating was based on a five-level Likert-type scale, which included: "not

at all," "rarely," "few times each month," "few times each week," and "almost every

day."

Environmental behavior measures. Pulled from the qualitative section of the CPI, these free-response questions asked participants to report any community volunteer or problem solving activities in which they participated. All participants were coded with a 0 (no reported activity) or a 1 (reported activity) to form a variable for civic action. The responses were then checked for an environmental focus, and participants were given a 0 (no environmental focus) or a 1 (environmental focus), to form a separate variable of environmental action.

Brief sense of community scale. The brief sense of community scale (BSCS; Peterson, Speer, & McMillan, 2008) is an 8-item measure used to gauge participant's sense of community (SOC). Participants were asked to respond to statements about their SOC using a 5-point Likert-type scale, which ranged from "1-Strongly Disagree" to "5-Strongly Agree," with a middle response of "3-Neutral." SOC measurements include dimensions of interpersonal emotional connection, group identity, needs fulfillment and belonging. The BSCS yields both an overall SOC score, as well as scores for subscales based on the four dimensions. An initial study with U.S. community members found evidence of the validity of BSCS (Peterson et al., 2008). In a 2010 study, the BSCS displayed excellent psychometric properties after being translated into German, thus supporting its usefulness for international research (Wombacher, Taff, Bürgi, & MacBryde, 2010).

Inclusion of nature in self scale. The inclusion of nature in self scale (INS; Schultz, 2002) includes is a single item measure containing seven images. Each image represents a varying degree of interconnectedness with nature and is intended to assess how closely one places themselves in nature. Each image contains two circles,

representing self and nature, respectively. In the lowest level of connectedness (scored as 1), the circles are completely separate. At the highest level (scored as 7), the circles are completely overlapped. Participants were instructed to choose the image that most closely matched how connected they felt to nature. This scale has been used in conjunction with sustainable development psychology, as a way to gauge a person's commitment to nature (Schutlz, 2002)

General self-efficacy scale. The general self-efficacy scale (GSES; Schwarzer & Jerusalem, 1995) is a ten-item measure designed to assess to self-efficacy, or the belief that one is capable of accomplishing difficult tasks and overcoming adversity. Participants were asked to respond to how true statements were to them that pertained to their belief in their ability to inflict change and control over a situation. A 4-point Likert-type scale ranging from "1-Not at all true" to "4-Exactly true" followed each statement. The scale was chosen for the study because of its high reliability across a number of studies, both nationally and internationally, with Cronbach's α values ranging from .75 to .91 (Schwarzer & Born, 1993; Schwarzer, 1999; Schwarzer & Scholz, 2000; Scholz et al., 2002; Luszczynska et al., 2004). Schwarzer and Jerusalem (as cited in Scholz et al., 2002) found one-year test-retest reliability ranging from $r = .75$ to $r = .55$. Previous studies with Tanzanian youth have produced acceptable internal consistencies for the GSES ($\alpha = .78$), as well (Johnson et al., 2011). This scale was used to measure the construct of confidence, or self-efficacy, based on the Lerner framework for PYD.

Environmental responsibility measures. The environmental responsibility measure consists of a series of three questions aimed at the assessment of personal responsibility for the environment. The questions included how important it was for one

to be involved in stopping pollution, protecting animals, and preserving the earth for future generations. In a study by Flanagan, Syversten, & Stout (2007), these measures were used to asses environmental values in a larger set of data designed to gauge civic engagement. They found test-retest reliability among the measures with $\alpha=.75$ to $\alpha=.74$ at Time 1 and Time 2 (Flanagan, Syversten, & Stout, 2007). Internal consistency for this study approached an acceptable level as well, with $\alpha = .60$.

Data Analytic Strategy

Analysis will include a set of logistic and multivariate regressions. For each regression, the first step will be used to control for the influence of demographic factors, including age, sex, school attendance, and living/economic situation.

Hypothesis 1 will be analyzed using a logistic regression because the outcome variable of reported civic/environmental action is dichotomous (i.e. civic action/no civic action and environmental focus/no environmental focus) and the predictor variables include a mix of continuous and categorical variables. The analysis is intended to decipher if participation in an environmental, connection to nature and one's community, and self-efficacy could serve as predictors for civic action, and particularly, environmental action. Two logistical regressions were preformed: to determine if the four factors could serve as predictors for general civic action, and to determine if they could serve as predictors for environmental action in particular.

The second part of the analysis will use a hierarchical multiple regression to analyze Hypothesis 2. The analysis will determine if participation in an environmental club, connection to nature and one's community, and self-efficacy could serve as predictors for environmental responsibility. Analysis was shifted to linear regression

because the outcome variable of environmental responsibility is not dichotomous.

Although, the 5-point Likert scale response set for the environmental responsibility

questions was ordinal, which is not ideal for linear regression, this analysis was the best

option for the data. Likert-type response sets are commonly used as outcome variables,

even in regressions, because they can be treated as continuous, if there is enough

variability in the measure.

In order to increase the variability of the outcome variable, and thus increase the

reliability of the variable type, the model used the mean of the three environmental

responsibility measures, rather than looking at each measure individually. Together, the

measures approach an acceptable α of .65 for internal consistency at α=.60, making it a

better option to combine the questions for variability's sake.

Results

First, I will discuss the descriptive statistics of the constructs and the correlations

among the variables. Then, I will include the data from the logistic regression predicting

civic and environmental action, based on the predictors of environmental club

participation, self-efficacy, and connection to nature and community. The same

predictors will then be used in a hierarchical regression to analyze the prediction of

environmental responsibility, which will be found at the end of this section.

Descriptive Statistics and Frequencies

Means and standard deviations were calculated for the BSCS (M = 3.955, SD =

.671), GSES (M = 33.609, SD = 5.005), and INS (M = 5.360, SD = 1.730). 955 youth

(87%) reported being involved in some type of civic participation, while 87 (8.2%) youth

reported no club participation at all. Likewise, 489 (51.0%) of youth reported

involvement in an environmental club, while 418 (43.6%) did not report environmental

club participation. Frequencies of the above variables, along with reported civic and

environmental action were also calculated (see Tables 1 – 2c).

Of the 959 participants with valid data, only 290 (30.240%) reported any type of

civic behavior on the free-response portion of the CPI. Furthermore, of the 290 who

reported general action, 108 (37.241%) included that they participated in some type of

environmental action, which is a mere 11.262% of the general sample. Due to the open-

ended construction of the question, this frequency may not be indicative of an overall

commitment to action for the study participants, but rather a snapshot from those who

chose to report their action.

Since every participant was given a score, regardless of whether or not they chose

to report behavior, these results may indicate a low percentage of civic action behavior

from the sample, but may also be indicative of a low level of willingness to answer

qualitative measures. The low percentages of reported behavior seem incongruent with

the high percentage of students who reported environmental club participation (51.00%).

Examples of civic action included a wide variety of behaviors, ranging from

education of an individual's community to perpetuation of traditional culture. Specific

examples include, "taught community human rights," "cleaned local hospital," "provide

help to disabled people," and "cleaned up the environment." Environmental action

pertained primarily to cleaning and repairing human inflicted degradation, with a small

amount of sustainable farming practices intermixed. Specific examples include, "planting

trees," "agricultural activities in school," "water conservation," and "educating others

about the environment."

Bivariate correlations were calculated and can be found in Table 8. With the exception of environmental club participation, all of the independent variables were significantly correlated.

Prediction of Civic and Environmental Action

In the first logistic regression, demographic factors (age, gender, school attendance, living situation, and economic situation) and scores from the GSES, BSCS, INS and environmental club participation were used as predictors of general civic action. Full results can be found in Table 5.

Employing a .05 criterion of statistical significance, Step 1, which included only demographics, was significant, χ^2(5, N = 633) = 11.080, p = .050. The Nagelkerke R^2 value (.024) shows that 2.4% of the variability in the data could be due to these demographic factors. The only significant individual predictor was gender (B = .430, Wald χ^2 = 6.129, p = .013, Odds Ratio = 1.537), which predicts males will be 1.537 times more likely to report civic action than females.

Step 2, which included demographic factors and environmental club participation, GSES, BSCS, and INS scores, was also statistically significant, χ^2(5, N = 633) = 16.917, p = .002. The Nagelkerke R^2 value (.060) shows that 6% of the variability in the data could be explained through the various predictors, which is significantly more than Step 1.

Individual significant predictors included both gender (B = .464, Wald χ^2 = 6.924, p = .009, and Odds ratio = 1.590) and self-efficacy (B = .075, Wald χ^2 = 12.591, p < .000, and Odds ratio = 1.078). In this model, the odds of predicted civic action were higher for men than women and self-efficacy was positively related to civic action.

The overall model was also significant, $\chi^2(10, N = 633) = 27.996, p = .001$, which indicates that the addition of the hypothesized predictors makes a positive difference in the predictive value of the model.

In the second logistic regression, scores from the GSES, BSCS, INS, and participation (both general and environmental) were used as predictors of environmental action. Full results can be found in Table 6.

Step 1, which included only demographics, was significant, $\chi^2(5, N = 633) = 13.840, p = .017$. The Nagelkerke R^2 value (.040) shows that 4% of the variability in the data could be due to these demographic factors. Like the first regression, the only significant individual predictor was gender ($B = .491$, Wald $\chi^2 = 4.000$, p $= .046$, Odds Ratio $= 1.634$), which predicted males would be more likely to report civic action than females.

Step 2, which included demographic factors and environmental club participation, GSES, BSCS, and INS scores, was also statistically significant, $\chi^2(5, N = 633) = 16.434$, $p = .002$. The Nagelkerke R^2 value (.086) shows that 8.6% of the variability in the data could be explained through the various predictors, which is more than double the R^2 of Step 1.

In this model, both gender ($B = .547$, Wald $\chi^2 = 4.807, p = .028$, and Odds ratio $= 1.728$) and self-efficacy ($B = .096$, Wald $\chi^2 = 8.420, p = .004$, and Odds ratio $= 1.100$) were significant individual predictors. Much like with civic action, this shows that the odds of environmental action were higher for men than women and that self-efficacy was positively related to the prediction of environmental action.

Additionally, the overall predictive model for environmental action was significant, χ^2(10, N = 633) = 30.273, p < .000, which concludes that the addition of the hypothesized predictors makes a positive difference in the predictive value of the model.

Prediction of Environmental Responsibility

A hierarchical multiple regression analysis was employed to predict environmental responsibility. All relevant assumptions of this statistical analysis were met before testing.

In the first step, demographic factors, including gender, age, living/economic situation, and school attendance, were entered into the model to control for covariates. These factors were not significantly correlated to environmental responsibility, F(5, 601) = 1.423, p = 2.14. In this step, the demographic factors accounted for only 1.2% of variability in the outcome variable of environmental responsibility.

In the second step, all of the remaining predictors (environmental club participation, connection to nature and community, and self-efficacy) were entered simultaneously, resulting in a significant increase in variability and predictive value, F(9, 597) = 6.248, p < .000, R^2 = .086. In this case, the percent of variability accounted in environmental responsibility for went up from 1.2% to 8.6% - which is a significant increase.

When all the independent variables were included in Step 2 of the regression model, only two independent variables were statistically significant: self-efficacy (β = .189, p < .000) and connection to community (β = .127, p = .005). The unstandardized regression coefficients (B), the standardized regression coefficients (β), and the p- and t-values for the full model are reported in Table 7.

Discussion

The purpose of this study was to create a credible model for the prediction of environmental engagement in Tanzanian youth, thus promoting their positive development and environmental action in an area where immediate action is necessary. Based on Zerrett & Lerner's (2008) conceptualization of PYD, the model included elements pertaining to the "Five C's:" competence, confidence, caring/compassion, connection, and character. These attributes were thought to predict the sixth "C," or contribution.

Predictor variables included various sociodemographic factors (to control for covariation), connection to nature/community, participation in an environmental club, and self-efficacy. The outcome variable, meant to represent contribution, was a combination of reported environmental behavior, or action, and environmental responsibility. Results revealed that these predictors did indeed create statistically significant models for the prediction of both environmental action and responsibility, and thus environmental engagement.

For Hypothesis 1, logistic regression found that the overall model was significant for the prediction of both general civic action and specific environmental action, even after demographic factors were controlled. However, only gender and self-efficacy were individually significant predictors.

This analysis predicted that men were more likely to report action than women, which could stem from several scenarios. Either women are less likely to participate in civic and environmental action than men, or they are less likely to report it. The results indicate that females experience lower levels of self-efficacy as well, and therefore could

be less likely to report action because they are less confident in their abilities to do so.

Historically, women in Tanzania have lower levels of education, and thus literacy (UN

MDGs, 2010). Lower base rates of literacy (only 67% in adult women; UNESCO, 2012)

could account for an inability to comprehend the question and/or report free-response

answers. Likewise, poverty presents an ever-present hurdle to female education, as

secondary schooling is neither free nor compulsory. It often makes more fiscal sense for

families to keep their girls at home and to teach them the traditional womanly household

duties, rather than paying for an education that doesn't specifically pertain to female

cultural expectations (UNESCO, 2012). This could leave females with less time to

participate in civic and environmental action, thus lowering the probability that they will

do so.

       Additionally, less access to education could mean that girls are less awareness and

knowledge of environmental issues and/or the skills to carry out various civic and

environmental actions. We have discussed the importance of competence in the

promotion of engagement; it is one of Zarrett and Lerner's "Five C's" of PYD (2008).

Girls are raised to be efficient household managers, collecting firewood and making

charcoal, among other chores. This speaks to the paradoxical nature of deforestation, and

thus environmental degradation. If women rely on extracting things from the environment

for their families' livelihoods, pro-environmental action could be less salient to them due

to the mixed messages they receive through cultural traditions and environmental

awareness.

       A more positive finding from the regression analysis is the significance of self-

efficacy in the prediction of both general civic and specific environmental action.

According to the model, those with higher levels of self-efficacy will be more likely to report action. This finding is consistent with other recent studies in the same area, in that self-efficacy is significantly related to environmental participation and action (Johnson et al., 2012). Our model shows that self-efficacy can be seen as both a product and predictor of environmental engagement.

Like the gender variable, the reasoning behind this trend could stem from different areas. Recent research in Tanzania suggests that participation in environmental and service learning programs facilitate the growth of self-efficacy in youth (Johnson-Pynn & Johnson, 2005, 2010; Johnson & Johnson-Pynn, 2007). Chawla & Cushing (2011) believe that the best way to get youth involved in the environment is through programs that set clearly defined goals, produce ongoing effort, provided dedication to and education of environmental issues, and experience at least marginal success in some of the programs major goals. All of these factors promote the growth of self-efficacy, as youth are not only learning new skills, but being rewarded and encouraged by constant support and victory as they go. Therefore, if youth are involved in programs like this that promote civic and environmental action, then self-efficacy should be seen as a predictor of civic and environmental action.

Self-efficacy could be *developed* by participation in civic and environmental action. As the youth participate in projects, they are growing in their competence of issues and confidence in their ability to create and complete projects, which is the backbone of self-efficacy. Environmental programs that foster the growth of environmental competence also promote a connection to the community and a commitment to action, both integral parts of the "Five C's" model, along with self-

efficacy (Johnson et al., 2009). The prediction model does not provide us with clear cause and effect relationship for self-efficacy and engagement, but it does point to the overall importance of it, which is a positive takeaway.

The hierarchical multiple regression analysis of Hypothesis 2 reported some similar findings. The overall model for the prediction of environmental responsibility was significant. Self-efficacy was once again a significant individual predictor, and the rational pertaining to Hypothesis 1 applies in this instance as well.

This regression also showed some differences from the previous analysis. First, there were no significant demographic factors in the model, and in fact, the model didn't become significant until the other variables were added. This could mean several things: 1) demographic factors do not have a significant effect on environmental responsibility, 2) there are other demographic factors that could have had an effect, but they were not analyzed, and 3) that the outcome variable of environmental responsibility was not a good measure of the construct, at least in this population. Potential limitations of the study will be discussed in the following section.

Second, this model revealed sense of community as a reliable and significant predictor of environmental responsibility. Community connectedness is an important aspect of environmental engagement because the more a youth feels like he/she is a part of a community, the more invested he/she will be in protecting it. If members of a community are disinterested or detached from it, there is little reason to join in activities to improve the community. (Parisi, et al, 2004; Chawla & Cushing, 2007). If we can support the connection youth feel to their community, we can hopefully foster a sense of responsibility for environmental behavior within their community as well. Tanzanian

youth are actively searching for ways to get involved and to be more connected to their

communities. They want to feel a sense of ownership (responsibility) for the choices and

development decisions being made (Restless Development, 2013), so it makes sense to

promote environmental awareness and responsibility while integrating youth into the

decision making process.

It is important to also point out the variables that didn't make the significance cut

for either model. Interestingly, they were the most environmentally related constructs.

Based on the hypotheses and background research, connection to nature (INS) and

participation in an environmental club should have been significant; if a person feels

more connected to nature and/or is in some type of environmental club, they should be

more likely to participate in environmental action or feel some type of responsibility for

the protection of it. It is possible that these measure weren't good measures for the

population, as this is the first time these outcome variables have been used in this context

in Tanzania. However, recent research with Ugandan youth found a significant increase

in nature connectedness, along with self-efficacy, among youth who were involved

environmental clubs (Johnson, et al., 2013). Perhaps youth with a greater sense of nature

connectedness are drawn to these programs, or perhaps a connection to nature is formed

through their participation, but either way this research points to the importance of

environmental programming in the encouragement of environmental engagement – which

remains an important takeaway from this study.

Limitations

Problems related to cross-cultural research including translation, interviewing,

and construct equivalent were minimized, yet remain. Although the scales used to

measure the predictor variables were psychometrically sound, the outcome variables created for this study posed several limitations.

The first outcome variable, environmental behavior (action), was created by converting qualitative free-response data to quantitative values of 0 (for no reported civic action) and 1 (for reported civic action). Furthermore, those values were converted to represent environmental action, and were given values of 0 (no reported environmental action, despite general action) and 1 (expressly stated environmental action).

The results could have been skewed by including all participants in the newly created variables for reported civic action and reported environmental action. The dichotomous format of 0 or 1 allowed for logistic regression analysis, but didn't take into account those who chose not to report action behaviors. It is impossible to know if those who did not report behavior actually participated in civic action or if they did not. Lack of education and poor literacy rates are a known problem in Tanzania, so it is possible that students didn't answer the free-response questions because they did not understand what it was asking, were unable to write in their response, or lacked confidence in their writing skills. Future studies may seek to analyze only those who reported some type of behavior, albeit a much smaller sample, as it will create a more complete picture of the possibility for certain predictors. Additionally, future studies may choose to use a forced-choice response (rather than a free-response) for this construct to avoid any misinterpretation.

The second predicted outcome presented a separate set of limitations. After conducting a test of internal consistency, the measures were found to approach, but not reach, an acceptable α of .65 with an α of .60. Despite lacking an acceptable level of

internal consistency, the decision was made to combine the variables in the interest of increasing variability, due to the acceptable α from the original study and the need for variability within our outcome variable. Without the combination, the regression would have included four variables predicting a single scale variable, which is not ideal as an outcome variable of a regression (outcome variables should be continuous).

Future Directions

Based on the significance of gender in the prediction of both civic and environmental action, future research may choose to hone in on the differences between male and female volunteer behavior. This study did not include an analysis of the specific behaviors, but rather categorized participants in either a group that reported action or didn't. It is possible that men and women approach civic and environmental action differently, so an analysis of the specific types of behavior (i.e. men are more likely to report planting trees, while women report more sustainable farming practices) could prove to be very interesting and informative for how best to reach each population.

The major way that Parisi et al. (2004) suggest mitigating a community's unwillingness or inability to participate in community activeness is through education. Expanding the community's knowledge of the importance of environmental action increases the probability that the community will begin to see it as a common goal. They will be more likely to contribute to civic action organizations because they understand the importance of environmental sustainability and protection, and they view it as the common good.

By educating youth in not only environmental issues, but general social issues as well, positive change is possible. The present research implicates self-efficacy and a

sense of community as the top predictors of environmental behavior and attitudes, so if

we hope to influence the future, we must begin there. Education that supports and

provides youth with opportunities to build their self-efficacy is of utmost importance, and

environmental education provides a solid background from which to begin. This research

may be used as a foundation for further investigation into the variables that influence

environmental action and responsibility, and will hopefully serve as affirmation that PYD

and environmental dedication can be mutually beneficial to society.

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Appendix A

Table 1
Descriptive Statistics

	N	Mean	Standard Deviation
BSCS	923	3.955	.671
GSES	770	33.609	5.005
INS	884	5.360	1.730
EC* Participation	907	.54**	.499

*Environmental Club
** Participants scored either 0 or 1; 0 being no reported participation and 1 being reported participation.

Table 2
General Frequencies

	BSCS	GSES	INS	EC Participation
N Valid	923	770	884	907
Missing	36	189	75	52

Table 3
Frequency of Environmental Club Participation

	Frequency	Percent
Environmental club participation	489	51.0
No environmental club participation	418	43.6
Total	**907**	**94.6**
Missing	52	5.4
Total	**959**	**100**

Table 4
Frequency of Reported Civic Action Behavior

	Frequency	Percent
No reported civic action (0)	669	69.8
Reported civic action (1)	290	30.2
Total	**959**	**100**
No reported environmental action (0)	851	88.7
Reported environmental action (1)	108	11.3
Total	**959**	**100**

Table 5
Logistic Regression Predicting Civic Action from Environmental Club Participation, Connection to Nature and Community, Self-Efficacy, and Demographic Factors

	Predictor	*B*	Wald χ^2	*p*	Odds Ratio
Step 1	Gender	.464	6.924	.009	1.590
	School Attendance	-.091	.374	.541	.913
	Living Situation	.196	1.912	.167	1.217
	Economic Situation	-.006	.153	.970	.994
	Age	.070	.842	.359	1.072
Step 2	Environmental Club Participation	.167	.900	.343	1.182
	INS	.042	.054	.431	1.043
	GSES	.075	12.591	< .000	1.078
	BSCS	-.117	.654	.419	.890

* Environmental Club Participation

Table 6
Logistic Regression Predicting Environmental Action from Environmental Club Participation, Connection to Nature and Community, Self-Efficacy, and Demographic Factors

	Predictor	*B*	Wald χ^2	*p*	Odds Ratio
Step 1	Gender	.547	4.807	.028	1.728
	School Attendance	-.289	1.366	.242	.749
	Living Situation	- .397	2.657	.103	.672
	Economic Situation	-.245	1.366	.242	.782
	Age	.112	1.111	.292	1.118
Step 2	Environmental Club Participation	.302	1.488	.223	1.353
	INS	.045	.336	.562	1.046
	GSES	.096	8.420	.004	1.100
	BSCS	.113	.289	.591	1.120

Table 7
Unstandardized Regression Coefficients (B), the Standardized Regression Coefficients (β), t-values, and p-values for Variables as Predictor of Environmental Responsibility

	Predictor	*B*	β	*t*	*p*
Step 1	Age	.027	.048	1.209	.227
	Gender	-.064	-.049	-1.248	.212
	School Attendance	-.044	-.040	-1.015	.311
	Living Situation	-.052	-.029	-.704	.482
	Economic Situation	.043	.040	.951	.342
Step 2	Environmental Club Participation	-.085	-.065	-1.654	.099
	INS	-.002	-.004	-.108	.914
	GSES	.027	.189	4.230	< .000
	BSCS	.120	.127	2.820	.005

Table 8

Correlational Matrix for Independent and Dependent Variables

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. Civic Action	-	.534*	.034	.051	.063	-.028	.037	-.001	.030	.057	.136	.040
2. EV Action		-	.068*	.040	.069*	-.063	-.057	-.033	.038	.043	.140*	.066
3. EV Respon.			-	.039	-.001	-.128*	-.006	.007	-.062	.071	.269	.200
4. Age				-	.028	-.028	.083*	-.152*	-.071	.018	.109	.006
5. Sex					-	.042	.006	-.058	-.049	.011	-.024	.018
6. School Attend.						-	-.252*	.069*	-.004	-.021	-.044	-.006
7. Living Situation							-	-.044	-.033	-.068	-.037	.007
8. Econ. Situation								-	-.044	-.033	-.068	-.037
9. EVC Partici.									-	.013	.004	.088*
10. INS										-	.188*	.146*
11. GSES											-	.406*
12. BSCS												-

* significant at $p < .05$